

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
27 January 2005 (27.01.2005)

PCT

(10) International Publication Number
WO 2005/007046 A2

(51) International Patent Classification⁷: **A61F 5/02**

(21) International Application Number:
PCT/CA2004/001040

(22) International Filing Date: 19 July 2004 (19.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/487,948 18 July 2003 (18.07.2003) US

(71) Applicant (for all designated States except US): **ORO ENTERPRISES LTD.** [CA/CA]; Bag 395, Dawson City, Yukon Territory Y0B 1G0 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HAKONSON, Greg** [CA/CA]; Bag 395, Dawson City, Yukon Territory Y0B 1G0 (CA). **DENNY, Christopher** [CA/CA]; 21 Cambridge Street, Victoria, British Columbia V8V 4A7 (CA).

PHILLIPS, Scott [CA/CA]; 5 - 1246 Fairfield Road, Victoria, British Columbia V8V 3B5 (CA). **FOSTER, Mark** [CA/CA]; 1659 Blair Avenue, Victoria, British Columbia V8N 1M6 (CA).

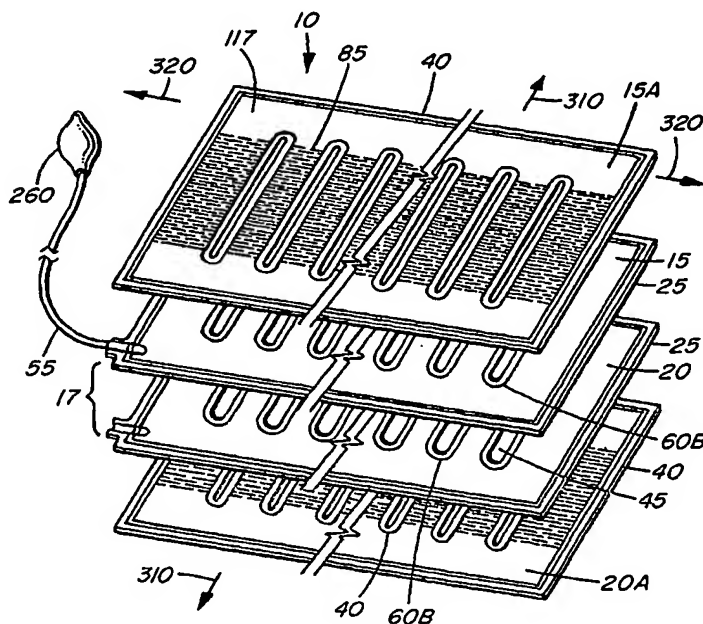
(74) Agents: **MANNING, Gavin N.** et al.; Oyen Wiggs Green & Mutala, 480 - The Station, 601 West Cordova Street, Vancouver, British Columbia V6B 1G1 (CA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **FLUID OPERATED ACTUATORS AND PNEUMATIC UNLOADING ORTHOSES**



(57) Abstract: A flexible fluid filled actuator has an elastic bladder and a guide surrounding the bladder. The guide has asymmetrical elastic properties. When the bladder is inflated the guide directs the bladder to expand preferentially in a selected direction or directions. The actuator has utility in the traction and/or unloading of portions of the body. A fluid-filled traction apparatus is disclosed which has particular advantages in spinal unloading.

WO 2005/007046 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

- *without international search report and to be republished upon receipt of that report*

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
27 January 2005 (27.01.2005)

PCT

(10) International Publication Number
WO 2005/007046 A3

(51) International Patent Classification⁷: **A61F 5/02**

(21) International Application Number:
PCT/CA2004/001040

(22) International Filing Date: 19 July 2004 (19.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/487,948 18 July 2003 (18.07.2003) US

(71) Applicant (for all designated States except US): PNEU
MEDEX INC. [CA/CA]; Bag 395, Dawson City, Yukon
Territory Y0B 1G0 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HAKONSON, Greg
[CA/CA]; Bag 395, Dawson City, Yukon Territory Y0B
1G0 (CA). DENNY, Christopher [CA/CA]; 21 Cam-
bridge Street, Victoria, British Columbia V8V 4A7 (CA).

PHILLIPS, Scott [CA/CA]; 5 - 1246 Fairfield Road,
Victoria, British Columbia V8V 3B5 (CA). FOSTER,
Mark [CA/CA]; 1659 Blair Avenue, Victoria, British
Columbia V8N 1M6 (CA).

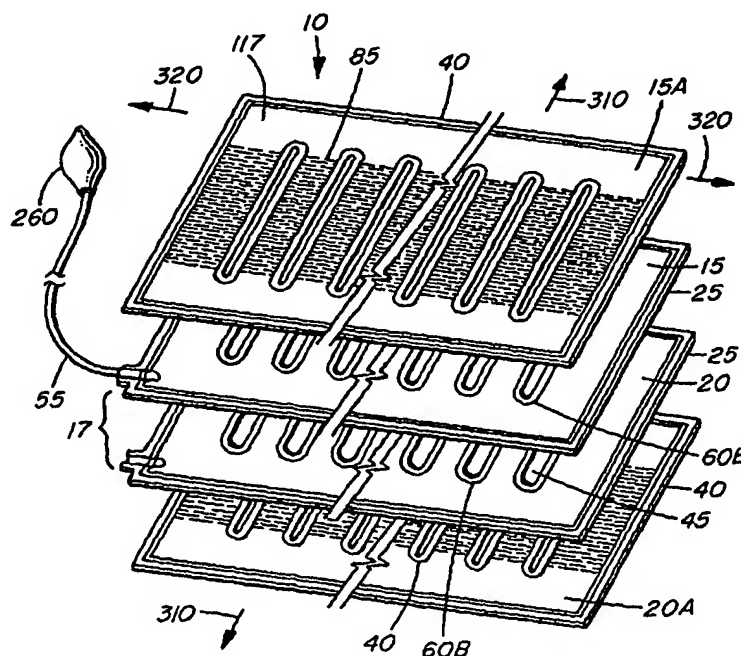
(74) Agents: MANNING, Gavin N. et al.; Oyen Wiggs Green
& Mutala, 480 - The Station, 601 West Cordova Street,
Vancouver, British Columbia V6B 1G1 (CA).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HN, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: FLUID OPERATED ACTUATORS AND PNEUMATIC UNLOADING ORTHOSES



(57) Abstract: A flexible fluid filled actuator (10) has an elastic bladder (17) and a guide (117) surrounding the bladder. The guide has asymmetrical elastic properties. When the bladder is inflated the guide directs the bladder to expand preferentially in a selected direction or directions. The actuator has utility in the traction and/or unloading of portions of the body. A fluid-filled traction apparatus is disclosed which has particular advantages in spinal unloading.

WO 2005/007046 A3

(88) Date of publication of the international search report:
6 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

— with international search report